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January 21, 2021

VIA ELECTRONIC FILING

The Honorable Jocelyn Boyd
Public Service Commission of South Carolina
101 Executive Center Drive
Columbia, South Carolina 29211

RE: South Carolina Energy Freedom Act (H.3659) Proceeding Initiated Pursuant to S.C. Code Ann. Section 58-40-20(C): Generic Docket to (1) Investigate and Determine the Costs and Benefits of the Current Net Energy Metering Program and (2) Establish a Methodology for Calculating the Value of the Energy Produced by Customer-Generators (See Docket No. 2020-229-E)
Docket No. 2019-182-E

Dear Ms. Boyd:

Enclosed for filing on behalf of Dominion Energy South Carolina, Inc. ("DESC") is a Proposed Order in the above-captioned docket.

By copy of this letter, DESC is providing a copy of the Proposed Order to counsel for the parties of record.

Please let us know if you have any questions or need additional information,

Very truly yours,

Matthew W. Gissendanner

MWG/kms
Enclosures

cc: Adam Protheroe, Esquire
Heather Shirley Smith, Esquire
Jeffrey M. Nelson, Esquire
Jenny R. Pittman, Esquire
Peter H. Ledford, Esquire
Rebecca J. Dulin, Esquire
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Katherine L. Mixson, Esquire
R. Taylor Speer, Esquire
Robert R. Smith II, Esquire
M. William Middleton, Esquire
(all via electronic mail and U.S. First Class Mail w/enclosures)

BEFORE

THE PUBLIC SERVICE COMMISSION

OF

SOUTH CAROLINA

DOCKET NO. 2019-182-E

In the matter of:

South Carolina Energy Freedom Act (H. 3659) Proceeding Initiated Pursuant to S.C. Code Ann. Section 58-40-20(C): Generic Docket to (1) Investigate and Determine the Costs and Benefits of the Current Net Energy Metering Program and (2) Establish a Methodology for Calculating the Value of the Energy Produced by Customer-Generators	))))))))	**CERTIFICATE OF SERVICE**

This is the certify that I have caused to be served this day one (1) copy of Dominion Energy South Carolina, Inc.'s **Proposed Order** via electronic mail and U.S. Mail to the persons named below at the addresses listed:

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Karen M. Scruggs

Cayce, South Carolina

This 21st day of January, 2021

.

BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2019-182-E

South Carolina Energy Freedom Act (H.3659) Proceeding Initiated Pursuant to S.C. Code Ann. Section 58-40-20(C): Generic Docket to (1) Investigate and Determine the Costs and Benefits of the Current Net Energy Metering Program and (2) Establish a Methodology for Calculating the Value of the Energy Produced by Customer-Generators	)

PROPOSED ORDER

ON BEHALF OF

DOMINION ENERGY SOUTH CAROLINA, INC.

TABLE OF CONTENTS

INTRODUCTION

This matter comes before the Public Service Commission of South Carolina ("Commission") pursuant to the requirements of S.C. Code Ann. § 58-41-20, as contained in Act No. 62 of 2019 ("Act 62"), which was enacted by the South Carolina General Assembly and became effective on May 16, 2019. Specifically, Act 62 directed the Commission to open a generic docket to "(1) investigate and determine the costs and benefits of the current net metering program; and (2) establish a methodology for calculating the value of the energy produced by customer-generators." S.C. Code Ann. § 58-40-20(C).

I. NOTICE AND PROCEDURAL BACKGROUND

On June 10, 2019, the Public Information Director for the Commission posted notice of discussions relating to procedural and scheduling issues related to House Bill 3659. On July 3, 2019, the Office of Regulatory Staff ("ORS") filed correspondence to ensure parties were provided with sufficient notice. That same day, Vote Solar filed what it described as a "specific path forward for the implementation of the net energy metering provisions" in S.C. Code Ann. § 58-40-20. Vote Solar proposed a series of technical workshops and intervenor-only negotiations to explore potential agreement on methodology to be conducted beginning in fall of 2019 and a status conference before the Commission in April 2020 to set a procedural schedule for the remainder of the proceeding. Comments were also submitted by Dominion Energy South Carolina, Inc. ("DESC"), Duke Energy Carolinas, LLC ("DEC"), Duke Energy Progress, LLC ("DEP") (DEC and DEP are collectively "Duke"), and the Southern Environmental Law Center ("SELC"), and all respectfully submitted that no immediate action was required by the Commission at that time.

On August 1, 2019, the Clerk's Office of the Commission filed a Notice of Oral Arguments which set oral arguments regarding procedural scheduling on August 20, 2019. On August 13, 2019, the ORS filed correspondence with the Commission requesting guidance on specific

procedural scheduling issues. On August 19, 2019, DESC, Duke, Lockhart Power Company ("LPC"), SELC, and South Carolina Solar Business Alliance ("SBA") filed a joint letter advising the Commission that no issues of procedural controversy exist among the parties and no action was needed or required by the Commission in this generic docket at that time.

On July 15, 2020, the Commission issued Order No. 2020-487 requesting that the parties consider and comment on a procedural schedule that contemplated the filing of a Petition to Intervene by September 17, 2020, filing of Direct Testimony by October 8, 2020, the filing of Responsive Testimony by October 29, 2020, and a hearing date of November 17, 2020. On July 27, 2020, DESC, Duke, the ORS, and Vote Solar filed comments regarding the Commission's proposed procedural schedule. On July 29, 2020, the Clerk's Office of the Commission filed a Notice of Filing and Hearing and Prefile Testimony Deadlines which memorialized the dates set forth in Order No. 2020-487. On August 12, 2020, the Commission issued Order No. 2020-532 which set dates for intervention, filing, and hearing deadlines. However, these dates were in conflict with the dates set forth in Order 2020-487 and also added additional filing requirements. On August 17, 2020, DESC filed correspondence objecting to the deadlines set by Order No. 2020-532 and requested reconsideration and modification to reflect the schedule established in Order No. 2020-487.

In response, on August 26, 2020, the Commission issued Order No. 2020-570, which reconciled the conflict and set the dates contemplated in Order 2020-487. Order No. 2020-570 also set separate proceedings for this generic docket concerning methodology for valuing the energy produced by customer generators and the cost-benefit analysis of net energy metering

("NEM") and the subsequent utility-specific dockets in which the solar choice metering tariffs would be considered and approved.

On August 27, 2020, the Clerk's Office of the Commission issued a Revised Notice of Filing and Hearing and Prefile Testimony Deadlines (the "Revised Notice"). This Revised Notice established October 8, 2020, as the deadline for all parties to submit Direct Testimony, October 29, 2020, as the deadline for all parties to submit responses to Direct Testimony, and November 17, 2020, as the Hearing Date.

On September 14, 2020, the Clerk's Office of the Commission filed an Affidavit of Publication from The State newspaper in Richland County, South Carolina, which certified that the Revised Notice was published in Richland County on August 30, 2020.

II. INTERVENTIONS

Petitions to Intervene were filed by the following parties: Vote Solar; South Carolina Coastal Conservation League ("CCL"); Southern Alliance for Clean Energy ("SACE"); Upstate Forever ("UF"); North Carolina Sustainable Energy Association ("NCSEA"); Solar Energy Industries Association ("SEIA"); Nucor Steel – South Carolina ("Nucor"); and South Carolina Appleseed Legal Justice Center ("Appleseed"). Alder Energy Systems, LLC (Alder Energy") filed an out-of-time petition to intervene.

DESC and Duke (individually, "Utility" and collectively, the "Utilities") participated pursuant to S.C. Code Ann. § 58-40-20(F)(4). DESC was represented by Matthew G. Gissendanner, Esquire, and K. Chad Burgess. Esquire. DEC and DEP were represented by Heather Shirley Smith, Esquire, J. Ashley Cooper, Esquire, and Marion William ("Will") Middleton, III, Esquire.

Vote Solar was represented by Thadeus B. Culley, Esquire and Bess J. DuRant, Esquire; SACE/SCCCL/UF were represented by Katherine Nicole Lee, Esquire and SELC; NCSEA was represented by Jeffrey W. Kuykendall, Esquire and Peter H. Ledford, Esquire; SEIA was represented by Jeffrey W. Kuykendall, Esquire; Nucor was represented by Robert R. Smith, II, Esquire; Appleseed was represented by Adam Protheroe, Esquire; Alder Energy was represented by R. Taylor Speer, Esquire.

The Petitions to Intervene were granted by the Commission. ORS, automatically a party pursuant to S.C. Code Ann. § 58-4-10(B), was represented in this docket by Andrew M. Bateman, Esquire, Nanette S. Edwards, Esquire, Jenny R. Pittman, Esquire, and Jeffrey M. Nelson, Esquire.

III. HEARING

In order to hear testimony, receive documentary evidence, investigate and determine the costs and benefits of the current net energy metering program, and establish a methodology for calculating the value of the energy produced by customer-generators, the Commission convened a video hearing on this matter on November 17-19, 2020 in the hearing room of the Commission with the Honorable Justin T. Williams[1] presiding as Chairman on November 17, 2020, and the Honorable Florence Belser presiding as Chair on November 18 and 19, 2020.

DESC presented the direct and responsive testimony of Mark C. Furtick, Manager of Renewable Energy Programs and Technical Services for DESC, and Margot Everett, Director for Guidehouse, formerly Navigant Consulting, Inc. ("Guidehouse"). DESC also filed direct testimony of Scott Robinson, Associate Director in the Advanced Solutions group at Guidehouse.

[1] Vice Chair Belser presided over the hearing on November 18 and 19 as Chairman Williams was on excused military leave.

Exhibits were included with the direct testimony of Witnesses Everett and Robinson, and Witness Furtick supplied a Late-Filed Exhibit at the request of the Commission.

Duke presented the direct and rebuttal testimony of Bradley Harris, Manager of Rates and Regulatory Strategy for Duke Energy Corporation ("Duke Energy"); Lon Huber, Vice President for Rate Design and Strategic Solutions for Duke Energy; and Dr. Julius A. Wright, Managing Partner of J.A. Wright and Associates, LLC. Duke also filed direct testimony of George V. Brown, General Manager of Strategy, Policy and Strategic Investment for Distributed Energy Technology in the Enterprise Strategy and Planning Group at Duke Energy, and Leigh C. Ford, Consultant for Duke, Exhibits were included with the direct testimonies of Witnesses Brown, Huber, Wright, and Ford, and the rebuttal testimony of Witness Harris.

ORS filed the direct testimony of Robert A. Lawyer, Deputy Director of Energy Efficiency and Renewables in the Utility Rates and Services Division of the ORS and Dr. John C. Ruoff, Principal and Owner of The Ruoff Group. ORS also filed direct and rebuttal testimony of Brian Horii, Senior Partner with Energy and Environmental Economics, Inc. ("E3"). Exhibits were included with the direct testimony of Witnesses Ruoff and Horii.

SCCCL, SACE, Upstate Forever, and Vote Solar filed the direct testimony and exhibits of Frank Hefner, Ph.D., Professor of Economics at the College of Charleston.

SCCCL, SACE, Upstate Forever, Vote Solar, SEIA and NCSEA filed the direct and rebuttal testimony of R. Thomas Beach, Principal Consultant of Crossborder Energy. Exhibits were included with the direct testimony of Mr. Beach.

SEIA and NCSEA filed the direct and rebuttal testimony of Justin R. Barnes, Director of Research with EQ Research, LLC. An exhibit was included with the direct testimony of Mr. Barnes.

Vote Solar filed the responsive testimony of Odette Mucha, the Southeast Regulatory Director of Vote Solar. An exhibit was included with the rebuttal testimony of Witness Mucha.

Alder Energy Systems, LLC filed the direct and rebuttal testimony of Donald R. Zimmerman, President and CEO of Alder Energy Systems, LLC.

IV. STATUTORY STANDARDS AND REQUIRED FINDINGS OF FACT

1. Background of Act No. 62 and Net Energy Metering.

The General Assembly, through Act 62, directed the Commission to address all renewable energy issues—including NEM programs—"in a fair and balanced manner." S.C. Code Ann. § 58-41-05. With respect to renewable energy issues related to solar generation and distributed energy resources, the General Assembly's specific intent was to:

> (1) build upon the successful deployment of solar generating capacity through Act 236 of 2014 to continue enabling market-driven, private investment in distributed energy resources across the State by reducing regulatory and administrative burdens to customer installation and utilization of onsite distributed energy resources;
> (2) avoid disruption to the growing market for customer-scale distributed energy resources; and
> (3) require the commission to establish solar choice metering requirements that fairly allocate costs and benefits to eliminate any cost shift or subsidization associated with net metering to the greatest extent practicable.

S.C. Code Ann. § 58-40-20(A).

As detailed in clause (3) above, Act 62 requires the adoption of an NEM successor program known as "Solar Choice Metering." The General Assembly also articulated specific requirements for a generic docket to investigate the current net energy metering program and separate, specific

requirements for the adoption of a successor solar choice metering tariff. The Commission fulfills the General Assembly's intent by adhering to the requirements set forth in Act 62.

The Commission has, consistent with the requirements of Act 62, established separate, utility-specific dockets in which it will hear testimony, consider utility-sponsored proposals, and establish solar choice metering tariffs for applications received after May 31, 2021. In accordance with Act 62, those tariffs must fairly allocate costs and benefits to eliminate any cost shift or subsidization associated with net metering to the greatest extent practicable, while permitting solar choice customer-generators to use customer-generated energy behind the meter without penalty. In doing so, the Commission will fulfill the General Assembly's stated intent with respect to the Solar Choice program. However, in contemplation of the Commission's establishment of the Solar Choice program, the General Assembly also articulated specific requirements for this separate generic docket to investigate the current NEM programs in the state (collectively, the "Current NEM Programs"). As such, the Commission will leverage the analyses in this docket when considering the Solar Choice Tariffs.

2. Requirements of the Generic Docket.

The Commission initiated this generic proceeding on May 28, 2019, to fulfill its obligation to "open a generic docket to investigate and determine the costs and benefits of the current net energy metering program and to establish a methodology for calculating the value of that energy produced by customer-generators." S.C. Code Ann. § 58-40-20(C). The Commission was directed to consider the following when evaluating the costs and benefits of the net energy metering program:

> (1) the aggregate impact of customer-generators on the electrical utility's long-run marginal costs of generation, distribution, and transmission;

> (2) the cost of service implications of customer-generators on other customers within the same class, including an evaluation of whether customer-generators provide an adequate rate of return to the electrical utility compared to the otherwise applicable rate class when, for analytical purposes only, examined as a separate class within a cost of service study;
> (3) the value of distributed energy resource generation according to the methodology approved by the commission in Commission Order No. 2015-194;
> (4) the direct and indirect economic impact of the net energy metering program to the State; and
> (5) any other information the commission deems relevant.

S.C. Code Ann. § 58-40-20(D).

With respect the last factor, the Commission also required the parties to provide NEM-related best-practices from other jurisdictions—with an emphasis on the Southeast—and also requested that the utilities provide a ten-year forecast for adoption of DER in each service territory.

As discussed above, in addition to these factors, the Commission finds the General Assembly's intent relevant in this proceeding, and deems it reasonable to consider the same when evaluating Current NEM Programs. On this point, testimony of various witnesses to this proceeding are at odds with the intent of the General Assembly for this particular proceeding. This generic proceeding was not initiated to consider proposals calling for continued subsidization in order to build upon the successful deployment of solar generating capacity. Likewise, this proceeding is not to hear testimony on the continued need to shift costs from NEM customers to non-NEM customers to ensure accelerated growth of the DER market in South Carolina. Rather, the Commission is only empowered in this generic docket to investigate and determine the costs and benefits of the "current net energy metering program and to establish a methodology for calculating the value of that energy produced by customer-generators." S.C. Code Ann. § 58-40-20(C) (emphasis added). The Commission will make determinations whether changes to Current NEM Programs are needed, but will not consider any items related to the Utilities' proposed tariffs

for the Solar Choice Program given that those matters will be considered in separate dockets. However, the Commission will build a record in this docket that will help its future consideration of the solar choice tariff proposals in those other dockets. By faithfully executing these requirements, it will ensure the General Assembly's intent is fulfilled.

V. EVIDENCE OF RECORD AND RESULTING FINDINGS OF FACT[2]

1. Cost-Benefit Analysis of Existing NEM Programs.

Although Act 62 enumerates specific items that must be considered in the cost-benefit analyses in this docket, the Commission received testimony at odds over the appropriate framework within which to consider such items. DESC advocated that any cost-benefit framework should account for the following four stakeholder groups: 1) customers that have not installed behind-the-meter generation, whether they are in the same class as NEM customers or otherwise; 2) NEM customers; 3) the utility; and 4) South Carolinians. Tr. at 125.4. DESC Witness Everett further explained that, in analyzing the costs and benefits to each of these stakeholders, the analysis focused on upon four categories of costs: 1) generation; 2) transmission and distribution; 3) integration and interconnection; and 4) administrative. Tr. at 125.5. Her analysis sought to provide a comprehensive view of the quantifiable or demonstrable costs and benefits of DESC's current NEM program. Tr. at 125.4. Moreover, Witness Everett emphasized the importance of verifiable inputs that "have been thoroughly vetted via the regulatory process" given that they are "the best representation" of the Current NEM Programs. Tr. at 131.9.

According to Witness Everett, it is important when evaluating the costs and benefits of Current NEM Programs to consider four (4) commonly accepted cost-benefit tests (Total Resource

[2] To the extent these findings are conclusions of law, they are adopted as such.

Cost Test, Societal Test, Utility Cost Test, and Ratepayer Impact Measure Test), as defined in the California Standard Practice Manual (SPM), to ensure a comprehensive view of the costs and benefits from all perspectives. Tr. at 125.23. Witness Everett explained that each of these tests was designed to evaluate the benefits of an investment in present value terms, as well as the ratio of absolute value of benefits to absolute value of costs. Tr. at 125.27 – 125.28. Witness Everett opined that all four tests provide the Commission with relevant and helpful data. Tr. at 125.34 – 125.35. Although these tests all seek to quantify certain costs and benefits, each test contains nuances and the tests should be utilized in conjunction with one another to obtain a comprehensive analysis of any NEM program. Tr. at 131.3. Witness Beach concurred with Witness Everett's recommendation to use the four standard practice manual tests—specifically, Witness Beach states on Page 21, Lines 22-27 of his responsive testimony:

> As explained in my direct testimony, it is vital to examine the benefits and costs of distributed resources from multiple perspectives of each of the major stakeholders – the utility system as a whole, participating NEM/DER customers, and other ratepayers – so that the regulator can balance all of these important interests. Thus, the Commission should consider the results of the full suite of standard practice manual (SPM) tests for cost-effectiveness.
>
> Tr. at 294.23.

Although there was conflicting testimony on the inputs to these costs tests, the Commission agrees with Witness Everett and Witness Beach that it is important when evaluating the costs and benefits of current NEM programs to consider four (4) commonly accepted cost-benefit tests (Total Resource Cost Test, Societal Test, Utility Cost Test, and Ratepayer Impact Measure Test). Tr. at 125.34; Tr. at 294.23. Each of these tests was designed to evaluate the benefits of an investment in present value terms, as well as the ratio of absolute value of benefits to absolute value of costs. All four tests provide the Commission with relevant and helpful data. Although these tests all seek

to quantify certain costs and benefits, each test contains nuances and the tests should be utilized in conjunction with one another to obtain a comprehensive analysis of any NEM program. When taken in conjunction, the results of each test indicate that the Current NEM Programs create a favorable adoption of rooftop solar in South Carolina, the costs of which are borne, at least partially, by non-NEM customers.

The Commission therefore finds that it is appropriate to use a combination of study methodologies to investigate and determine the cost benefit of the Current NEM Programs. Moreover, based on the testimony provided, the Commission is persuaded that going forward parties should not be restricted or otherwise limited in the methodologies available to investigate the costs and benefits of a successor program. However, the Commission does recognize the importance of fully-vetted and approved input assumptions into these methodologies.

(a) Long-Run Marginal Costs.

Act 62 requires the Commission to consider "the aggregate impact of customer-generators on the electrical utility's long-run marginal costs of generation, distribution, and transmission." S.C. Code Ann. § 58-40-20(D)(1). It is a well-known economic principle, which is echoed by the Parties, that marginal costs represent the change in the costs to provide an additional unit—in this case, an additional unit of electrical service due to a small change in demand. DESC Witness Everett testified that the impact on the utility's long-run marginal costs and value ascribed to distributed energy resources are aligned and require a systematic and repeatable methodology for quantifying short and long-term benefits and costs of distributed energy resources. Tr. at 125.3. Utilizing the UCT, Witness Everett concluded that no net impact arises to DESC's long-run marginal costs given that DESC is able to recover the costs associated with such impacts, but

cautioned that this analysis is specific to the tariff under which the customers take service and may need to be modified if the tariff structure changes. Tr. at 125.34. Witness Everett also utilized the Total Resource Cost Test to measure the net benefits or costs of the customer generation resource option. Tr. at 125.24. Witness Everett explained that using the currently-approved values for the current NEM methodology under Act 236 (the "Current Methodology") as the basis for benefits and costs, the benefits calculated in the Total Resource Cost Test are the avoided generation supply costs, the reduction in transmission, distribution, generation, and capacity costs valued at marginal cost for the periods when there is a load reduction. Tr. at 125.24. The costs in this test are the program costs paid by both the utility and the participants plus the increase in supply costs for the periods in which load is increased. *Id*. Thus, all equipment costs, installation, operation and maintenance, cost of removal (less salvage value), and administration costs, no matter who pays for them, are included in this test. Tr. at 125.24. ORS Witness Horii defined "Long-run Marginal Costs" as representing the change in the costs of providing electrical service due to a small change in demand. Tr. at 576.9. Marginal costs are different from average costs, which reflect the costs of the output of all plants. ORS Witness Horii further explained that the qualifier "long-run" indicates that the marginal cost should not just reflect changes in variable costs, but also consider changes in "fixed" factors such as generation, transmission, and distribution assets. *Id*. Duke Witness Harris testified that marginal costs reflect the cost of the utility providing an additional unit—the cost of producing an additional kilowatt-hour (kWh), for example. Tr. at 353.13. Witness Harris explained that marginal costs normally have not been incurred yet, meaning that the analysis is forward-looking. *Id*. Duke Witness Harris testified that excess energy exported to the grid by customer-generators has a similar effect on the utility's costs as qualifying facilities

under PURPA that are connected to the secondary distribution system. Tr. at 353.13. The avoided cost for PURPA exports is determined by the Commission in each utility's avoided cost docket. Tr. at 353.13 – 353.14. Duke Witness Harris testified that the same value should be applied to exports from customer-generators. *Id*.

While on the surface these arguments may not appear aligned, they in fact support the underlying premise that the costs and benefits analysis of NEM should consider the long run costs and benefits of kilowatt (kW) and kWh of generation from a customer generator, and in particular, consider the implications on non-participating customers and customer-generators. Marginal costs studies examine the future costs of supplying an incremental kWh to a customer while embedded costs represent the costs that have already been incurred to serve all customer load. Marginal costs are the appropriate representation of the opportunity cost of a customer generator kWh in that the costs of that kWh would be equal to or less than the utility's marginal cost to ensure economic efficiency of the source of the kWh. Embedded costs are appropriate for evaluating the costs a customer-generator pays for services from the utility, to include enabling exports of customer-generation to the grid.

The Commission finds that the UCT is an appropriate measure for evaluating the impact on long-run marginal costs. Further, a UCT resulting in a negative number (or UCT ratio less than 1), meaning that the utility is paying costs for exported energy in excess of its avoided costs, results in an increased marginal cost under the specific program. The Commission is persuaded that under the Current NEM Programs, the Utilities are paying more than their avoided costs for exports which will have the impact of raising long-run marginal costs over time. However, given the testimony presented and the requirements of Act 236, the Commission declines to make changes

to the Current NEM Programs. Going forward, the Commission finds it appropriate to utilize the UCT to evaluate evidence of potential subsidization. DESC's argument is persuasive that the inputs into the UCT are tariff-specific given that they depend upon the cost recovery mechanisms that accompany any successor tariff. The Commission also finds that the UCT should include all incentives paid to customers to encourage them to modify their behaviors or invest in customer-generation. Further, the Commission recognizes that the UCT, under alternative cost-recovery mechanisms such as those outlined in Act 62, the UCT could result in forward-looking utility costs that are higher than the measured benefits—for which customers of the Utilities would be responsible. As such, the Commission finds that NEM programs represent the need for a heightened level of Commission scrutiny given their unique potential to shift future costs onto customers that have no desire or ability to participate in any such programs.

(b) Cost of Service Implications.

Act 62 further requires an evaluation of the:

> cost of service implications of customer-generators on other customers within the same class, including an evaluation of whether customer-generators provide an adequate rate of return to the electrical utility compared to the otherwise applicable rate class when, for analytical purposes only, examined as a separate class within a cost service study.

S.C. Code Ann. 58-40-20(D)(2).

Cost of service ("COS") studies, such as those mentioned in Act 62, are used to assign the total revenue requirement of a utility to each class of customers. Although an NEM customer may benefit from a lower bill, the utility is still required to plan and invest in infrastructure sufficient to provide reliable energy to the NEM customer when the need arises.

Both DESC and Duke proffered testimony regarding load profiles and system needs of NEM-customers. This provided helpful context for the discussion of cost of service implications on other customers within the same class. DESC Witness Furtick testified first and explained when the sun is not shining, load profiles for NEM customers are identical to load profiles for non-NEM volumetric rate customers because they consume electricity in similar patterns across the evening and through mid-morning. Tr. at 19.5. Witness Furtick explained that on a typical sunny day, NEM customers can self-supply some or all of their needs, but production decreases and load increases as the evening hours approach. During evening hours, the typical NEM customer looks like a typical non-NEM customer. Mr. Furtick also noted that even during daylight hours, it is possible for NEM customers to consume energy supplied by DESC even when the sun is shining, depending on various factors such as fluctuations in that customer's load and variability of the PV system generation. Tr. at 19.6. The load profile of an NEM customer simply contains more variability than a non-NEM customer because of the generation profile of solar. *Id*. For example, on a day when mid-day thunderstorms move quickly over an NEM customer's residence, that customer could change rapidly from self-sufficient to completely reliant on DESC to supply power, and then back to self-sufficient. Tr. at 19.7.

Duke Witness Huber testified to similar usage profiles as Witness Furtick and then explained the impact on system planning. Witness Huber explained that although NEM customers differ in key ways from non-NEM customers, the electric distribution system must be designed, constructed, and operated to provide safe and reliable service to all customers. Tr. at 385.7. This includes planning for the maximum demand that all customers, including NEM customers, could place on the system. As such, regardless of the customer's participation in an NEM program, the

Companies must build out and plan their systems assuming NEM customers will be consuming power from the Companies during peak time periods—including having personnel, equipment, and facilities in place to serve all customer demands 24 hours a day, 365 days a year. Tr. at 385.7.

DESC Witness Everett examined these implications by primarily utilizing the Ratepayer Impact Measure ("RIM") test because it measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program. Tr. at 125.25 – 125.26. Rates will go down if the change in revenues from the program is greater than the change in utility costs. *Id*. Conversely, rates or bills will go up if revenues collected after program implementation are less than the total costs incurred by the utility in implementing the program. *Id*. This test indicates the direction and magnitude of the expected change in customer bills or rate levels. *Id*. She noted that the RIM test revealed that customers under the Current NEM Programs experience a bill savings in excess of the reduction in the DESC's cost to serve those customers. Tr. at 125.34. In essence, DESC Witness Everett noted that the RIM test evidences a cost-shift. Tr. at 125.35. Because of this, Witness Everett cautioned that all embedded costs should be allocated to NEM customers specifically, particularly if they are in a separate rate class because the Utilities would have no way of recovering those costs from other customers. Tr. at 131.15. Specifically, it is possible to create a different rate structure that would permit NEM customers to exist as a separate class and fully recover all embedded costs that should be allocated to those customers. *Id*. Witness Horii utilized a COS study to determine these implications. Tr. at 576.9. According to Witness Horii, COS studies are used to assign the total revenue requirement of a utility to each class of customers. Tr. at 576.9 – 576.10. ORS Witness Horii discusses costs of service studies in the context of the increased complexity of the modern grid and the increased sophistication of many

aspects of utility operations and planning. Tr. at 576.18. ORS Witness Horii advises that when considering costs to be allocated to a customer class, the Commission should include all customer-incurred costs related to use of the utility grid. Tr. at 576.36. These include the standard cost items that are traditionally included in embedded cost of service studies such as production, transmission, distribution, and customer-related costs. *Id*. With increasing levels of behind the-meter solar, however, a COS study needs to allocate costs based on a customer's maximum use of the grid, whether in the normal (grid power flowing to the customer) or reverse (customer power flowing to the grid) direction. The study should also include any costs for new grid investments to address reverse flow as well NEM solar grid integration costs which would likely be exacerbated by drops in distributed solar generation. COS studies are also referred to as embedded cost studies since they are focused on recovering the cost of historical (embedded) investments and current operating expenses. Unlike marginal costs studies that look at changes in costs, COS studies focusing upon embedded costs studies look at how to divide a utility's total accounting costs among customer classes such as residential, commercial, and industrial. Marginal cost studies examine whether customer-generators will pay their share of future costs.

Duke Witness Harris testified that he performed the embedded cost studies for DEC and DEP. Tr. at 353.5. Duke Witness Harris testified that these studies utilized two existing data sets—(i) cost of service studies and (ii) production meter data. Tr. at 353.6. These are the cost of service studies that current rates are based upon and were derived from the 2018 rate cases for DEC and DEP in Docket Nos. 2018-318-E and 2018-319-E. *Id*. As such, the 2018 studies were utilized to establish the costs within the embedded cost studies. *Id*. The embedded cost studies estimated the unwarranted and gross cost-shift to other residential customers from customers under

the Current NEM Programs. Likewise, the embedded cost studies also reveal whether NEM customers would provide an adequate rate of return compared to the residential rate class if they were to be a separate class within a cost of service study. Similar to DESC Witness Everett and ORS Witness Horii, Duke Witness Harris agreed that a cost-shift arises under these programs in an estimated monthly cost-shift of $35 in DEC and $64 in DEP.

The Commission agrees with the bulk of the testimony submitted in this docket—a cost-shift exists under Current NEM Programs. However, the Commission does not recommend any changes to the Current NEM Programs at this time. Going forward, the Commission finds it appropriate to utilize the well-established RIM test to analyze cost of service implications, including level of cost-shift, within and among customer sectors. Moreover, based on its review of the various analyses, the Commission declines to make any findings in this docket regarding the use of marginal cost studies in the subsequent Solar Choice docket.

(c) Value of Generation.

Act 62 requires the cost-benefit analysis to consider "the value of distributed energy resource generation" according to the Act 62 Methodology. S.C. Code Ann. § 58-40-20(D)(3). The Current NEM Programs already include a methodology by which to measure costs and benefits of these programs. The Current Methodology was established in Docket No. 2014-246-E and defines eleven (11) value components and specifies the calculations for each.

DESC Witness Everett testified that DESC has updated values consistent with the Current Methodology annually in its fuel proceeding before the Commission since implementation of the methodology. Tr. at 125.13. She testified that the values were most recently updated as a result of Order No. 2020-244 in the Company's avoided cost proceeding. *Id*.

Duke Witness Brown similarly described the Current Methodology which he described as the Act 236 VOS. Tr. at 165.11. Duke Witness Brown testified that the Act 236 VOS represents the estimated power system benefits from the production of the solar energy at the customer's premises. *Id*. According to Duke Witness Brown, most of these benefits are avoided fuel and purchased power costs, but the Act 236 VOS calculation includes all quantifiable benefits. *Id*.

DESC Witness Everett was questioned as to whether additional benefits or externality costs are reflected in the value. Tr. at 125.19. DESC Witness Everett cautioned the Commission against any recommendation that it should consider externality costs within the methodology because those costs are extremely difficult to quantify. *Id*. Moreover, according to Witness Everett these costs are not costs avoided by the utility. *Id*. Placing a value on such externalities would effectively place the Commission in the position of levying taxes on all customers to be collected by the utilities. *Id*.

The Commission agrees with Mr. Horii's recommendation to adjust the cost of losses to be 50% of distribution level losses to account for the potential costs associated with moving exported electricity to other customers on the DESC system. Tr. at 578.3. Both Utilities explained how current values of generation have been recently established in recent contested proceedings before the Commission. Both Utilities, therefore, request that no changes be made to the value of generation for the current net energy metering program. The Commission notes that the primary purpose of the current proceeding was an investigation into only the Current NEM Programs, rather than to initiate a rigorous review of rate components as would be the case in a fuel clause proceeding or an avoided cost proceeding. Based on the evidence presented and the scope of the

current proceeding, the Commission agrees that no changes should be made to the value of generation for the current net energy metering program.

(d) Direct and Indirect Economic Impact.

Act 62 requires the Commission to consider the direct and indirect economic impact to the State arising from the Current NEM Programs. S.C. Code Ann. § 58-40-20(D)(4). Witnesses provided a range of testimony regarding the direct and indirect economic impact of net energy metering. DESC and Duke did not produce an actual evaluation, but described the limitations by considering the direct and indirect economic impact of the current program. DESC Witness Everett testified that direct and indirect economic impacts refer to the creation of economic growth, as measured in conventional economic growth metrics such as an increase in South Carolina's Gross Domestic Product ("GDP") and increases in job levels within South Carolina. Tr. at 125.7. According to DESC Witness Everett, Direct impacts from NEM implies that the program would be measurably responsible for creating GDP growth or new jobs while indirect would be the secondary or tertiary impacts of NEM on these metrics. *Id*.

Duke Witness Wright testified that the direct economic impacts from a particular decision are the immediate results of the direct expenditures related to a certain activity and represent the initial economic changes related to the industry in question. Tr. at 260.8. Dr. Wright explained that direct impacts describe the changes in economic activity for the particular part of the economy, like construction, that first experiences a change because of a project, policy decision, or some other economic stimuli. Tr. at 260.9. Indirect economic impacts, according to Dr. Wright, typically represent the increase in economic output from the various industries whose output is impacted by the industry affected with the direct economic impact discussed in the preceding

paragraph. *Id*. In other words, the indirect economic impact from a new residential solar installation can be the changes in sales, income, or jobs for businesses within the region that supply goods and services to the residential solar installers. *Id*.

Dr. Wright also conducted a state survey to determine the use of direct and indirect economic impact studies. Tr. at 260.4. Dr. Wright testified he reviewed NEM valuation policies, reports, and proceedings for a number of states which indicate the following:

> First, several states have examined the issue of economic impacts related to NEM (or solar valuation)—and usually these economic impacts specifically studied the economic impacts related to the creation of jobs.
> Second, no state has used economic impacts in a quantitative fashion in terms of applying a dollar value that was added or subtracted from the overall costs used in that state's NEM program.
>
> Tr. at 260.18 – 260.19.

DESC Witness Everett sounded similar caution, and explained the components required to determine the direct and indirect impacts are extremely difficult to specifically measure and must be inferred through economic forecasting methodologies. Tr. at 125.7. DESC Witness Everett further explained that even if anecdotal evidence points to job growth or GDP growth, such as the increase in "solar related" jobs, it is not clear that increase is directly attributed to a NEM program versus other solar or renewable efforts encouraged by the State and utilities, such as wholesale solar or community solar. Tr. at 125.8. Witness Everett cautioned about the inclusion of those impacts in the analysis. *Id*. Direct and indirect economic impacts are extremely difficult to quantify, and it is important to develop a credible, defensible, and transparent methodology for evaluating these impacts in order to include those costs in the analysis.

The South Carolina Coastal Conservation League, Southern Alliance for Clean Energy, Upstate Forever, and Vote Solar jointly sponsored Witness Hefner. Witness Hefner utilized inputs

from The Solar Foundation's annual survey of solar jobs with IMPLAN modeling software to estimate the impact of the current net energy metering program in South Carolina. Witness Hefner testified that "economic impact' includes: (1) direct impacts, (2) indirect impacts, and (3) induced impacts. Tr. at 417.15. Witness Hefner explained that direct impacts are the purchase of local services, labor, and goods. *Id*. For example, direct impacts include wages paid to the installers of solar panels. *Id*. Indirect impacts, according to Witness Hefner, are sometimes called the ripple effect, are the purchases of goods and services by the firms in South Carolina that install solar panels. *Id*. Witness Hefner produced a report analyzing the economic impact of the solar industry in South Carolina by inputting data from The Solar Foundation's annual survey of solar jobs into a regional impact model, IMPLAN, to assess the total economic impacts of jobs created by the solar industry in South Carolina. Tr. at 417.5. Testimony reveals that this IMPLAN model is a well-recognized impact model that is used by many researchers, including federal, state, and local governments, universities, and private companies such as utilities. However, on cross examination, Witness Hefner conceded that he "did not do anything personally to ensure that [jobs] were not double-counted." Tr. at 423 - 425. Likewise, when questioned as to whether The Solar Foundation implemented any measures to guard against double-counting, Witness Hefner similarly could not provide any evidence of any such measures. *Id*. Even if the jobs were not double-counted, Witness Hefner revealed that so long as someone spent 50% of their time in a solar related job, his information counted it as a full-time job—but could not provide any data as to whether The Solar Foundation's report counted 50% of the wages that would result from a full-time position, or whether the wages for such a position reflected a full-time employee, regardless of the amount of time spent on the subject activity. *Id*. Lastly, cross-examination revealed that

Witness Hefner's study did not account for whether the money invested in the solar industry could have been utilized to provide a greater economic benefit to South Carolina if invested in some other way, or the negative consequences to other technologies if the state exclusively pursued solar to the exclusion of other resources. Tr. at 423 - 425.

The Commission has considered the direct and indirect, qualitative impact of the Current NEM Programs on the State. The Commission finds that Witnesses Everett and Wright raised prudent and consistent concerns regarding the use of direct and indirect impact data. The Commission appreciates their experience in other jurisdictions and their testimony regarding how other states have either declined to use this data or have placed conservative limits on the use of this data. Some of these exact warnings and cautions proved prescient during the cross examination of Witness Hefner as explained above. As such, the Commission will consider the testimony of Witness Hefner and the data produced to evaluate the qualitative impact of the current net energy metering program. However, based on the testimony received, the Commission is unable to determine what actual benefit the State has received. The Commission is concerned with hypothetical inputs used and the obvious gaps in Witness Hefner's study given Mr. Hefner's admissions during cross-examination, as discussed above. Among other things, the Commission is very concerned about the potential gaps in translating national data to a state-specific study—which were revealed by Witness Hefner on cross-examination for the first time. Therefore, the Commission will note the data suggesting the direct and indirect economic impact of net energy metering; however, the Commission has significant concerns about the credibility, defensibility, and transparency of study inputs. As such, the Commission will join the other state jurisdictions

that refuse to use direct and indirect economic data in a quantitative fashion in terms of applying a dollar value to be added or subtracted from the overall costs used in that state's NEM program.

(e) Other Information the Commission Deems Relevant.

Act 62 gives the Commission leeway to consider any other items this Commission deems relevant. On August 26, 2020, the Commission issued a Directive requiring a survey of NEM best-practices in other jurisdictions, with a focus on the Southeast, as well as a Utility-specific ten-year forecast for solar adoption. Additionally, the Commission considers the General Assembly's intent instructive in its findings.

i. Ten-Year Solar Forecast.

As discussed above, the Commission required the Utilities to present a forecast of solar adoption in their jurisdictions over the next ten years. The Commission believes a review of such forecasts is necessary to obtain a full view of the DER landscape in South Carolina given wide-ranging mandates regarding renewable energy within Act 62. Initially, the Commission notes that, as with any forward-looking forecast, there will be a number of unknowns that simply cannot be made certain. Nevertheless, with this understanding, the Commission believes conducting a review of such forecasts is useful and probative.

For DESC, Witness Robinson provided the Commission with the ten-year forecast for DESC's service territory. Tr. at 93.3. Witness Robinson's forecast provides the Commission with not only an overall view of solar adoption over the next ten years, but also a more granular analysis of growth across specific customer segmentations, such as Single Family Residential and Commercial and Industrial. Tr. at 93.5. Across each segment, Witness Robinson provided three scenarios which adjusts several key variables affecting solar adoption in accordance with the focus

of the given scenario. Tr. at 93.7. These variables include tax credits and installation costs, among other things. Tr. at 93.8. After reviewing all three scenarios presented, including Witness Robinson's least favorable solar adoption scenario, it is clear that solar adoption is forecasted to increase from current levels in DESC's service territory.

Duke Witness Brown's forecast bears a striking resemblance to Witness Robinson's. Duke's forecast includes two scenarios—exports valued at avoided cost and exports valued at existing retail rates. Tr. at 165.14. Although Witness Brown likewise cites various unknowns that cannot be accounted for in the forecast, Duke expects solar adoption to increase in the service territories of DEC and DEP over the next ten years. Tr. at 165.16. Although there was limited debate regarding some of the inputs to these forecasts, the Commission finds the methodologies and underlying inputs used to produce the forecasts appropriate in fulfilling the Commission's request. These results indicate that the DER environment into which Act 62 was adopted is much different than that of the environment of Act 236. As discussed above, a primary motivation of Act 236 was to accelerate the adoption of DERs in South Carolina. As a natural evolution from Act 236's focus on promoting customer-sited generation growth for the sake of growth, Act 62 reflects a more sophisticated and mature next step that focuses on different DER-related goals, such as "fairly allocating costs and benefits." Indeed, the Commission finds that the DER market in South Carolina is robust and is forecasted to continue to be so, regardless of the actual rate structures in place for the Solar Choice Tariffs, so long as they comply with Act 62.

ii. NEM Best-Practices.

Although Act 62 tasked the Commission with reviewing the Current NEM Programs, the Commission finds it instructive to review NEM best practices from other jurisdictions to obtain a

full picture of NEM not only in this state, but also nationwide. In this aspect, the Commission notes that the Current NEM Programs are not on the "cutting-edge" of NEM programs across the country. For example, DESC Witness Everett provided the Commission with a thorough survey of a multitude of other jurisdictions. Tr. at 125.36. From DESC Witness Everett's survey, three-high level trends are apparent: (1) jurisdictions almost universally recognize the customer's right to self-supply power, (2) jurisdictions are moving away from strictly flat or tiered volumetric rates in favor of more sophisticated rate structures that "ensure full cost recovery" by aligning rates with costs to serve NEM customers, and (3) many states are moving away from valuing exports via a retail rate in favor of valuing exports at avoided costs. Tr. at 125.38. The Commission finds the second trend most instructive for purposes of this docket in light of the volumes of testimony detailing the complexities of serving NEM customers who have the ability to self-consume and export power. The Current NEM Programs simply cannot adequately recover the costs to serve NEM customers given that the volumetric rates are simply indicative of the customer's usage rather than the utility's cost to serve. This is the fundamental reason why a cost-shift arises under the Current NEM Programs. Duke Witness Huber echoed DESC Witness Everett's testimony and supplied the Commission with a long list of jurisdictions that have evolved beyond volumetric rates in favor of new rate structures in hopes of alleviating this cost-shift. Tr. at 385.10. Likewise, ORS Witness Horii echoed key tenets within Act 62 in noting that an "ideal tariff would minimize any cost shift between customers with and without customer generator technology, while still allowing for customer choice to implement DSM or other usage controls." Tr. at 576.35. (emphasis in original). Witness Horii goes on to explain that to minimize this cost-shift, there are certain key components which should be included in the tariff, such as rates that are specifically

designed to fully recover costs, and Witness Beach included TOU rates and a minimum bill as rate structures that should be utilized in the NEM context to align costs. Tr. at 576.37; Tr. at 385.10. As described by Witness Everett, rate making tools such as minimum bills are widely utilized to "ensure all customers, not just customers with customer-generation, pay for the costs associated with being connected to the grid and having real time access to the grid." Tr. at 125.37. A review of the testimony provides a solid foundation from which the Commission can view other jurisdictions around the country, and the fact that those jurisdictions are increasingly turning their focus to eliminating cost-shift—a key tenet of Act 62—is not lost on this Commission. As such, going forward, the Commission encourages tariff structures that utilize a combination of these best practices—including TOU rates, minimum bills, and explicit export credits—in the Solar Choice Dockets to achieve the goals of Act 62 which simply cannot be achieved with volumetric rates alone.

iii. Impact on Low-Income Customers

Witness Ruoff provided testimony on behalf of the ORS regarding the impact of cost-shift or cross-subsidization of NEM customers "by customers who do not have, do not want, and cannot afford to install solar generation." Tr. at 539.4. Witness Ruoff pointed to the intent of the General Assembly "to ensure that successor net metering tariff 'fairly allocate costs and benefits to eliminate any cost-shift or subsidization associated with net metering to the greatest extent practicable.'" Tr. at 550.3. Witness Ruoff also explained that national studies "make clear" higher income consumers are more likely to adopt solar than lower income consumers. *Id*. Likewise, Witness Horii testified that programs in other states have shown that solar is typically "adopted by

more affluent residential customers, with the result being that lower income customers bear and unequal burden from any cost shift." Tr. at 576.41.

Witness Everett echoes these concerns when noting that any potential subsidy in an NEM program creates "significant implications on rate levels, and, in particular, on low- and medium-income customer bills." Tr. at 131.12. Duke Witness Huber explains that reducing the cost-shift or cross-subsidization under an NEM program can have significant benefits to these low- and medium-income customers. Tr. at 387.8.

The Commission has been presented with substantial and credible testimony regarding NEM's potential to harshly impact low-income customers. As noted herein, Act 236 was designed to encourage the adoption of rooftop solar. In fulfilling our investigative duties under Act 62, the Commission finds that the Current NEM Programs have a disproportionately negative impact on low-income customers due to the simplistic rate design which results in cost-shift and subsidization. While the Commission declines to alter the Current NEM Programs, it takes this opportunity to explain on the record the need to address cost-shift and subsidization in future Solar Choice Tariffs. As such, the Commission will carefully review the proposed Solar Choice Tariffs in subsequent dockets to fully understand the impacts that any remaining cost-shift may have upon low-income customers thereunder.

iv. Resiliency

Testimony was offered regarding the ability to monetize any quantifiable enhanced reliability and resiliency resulting from customer-sited generation under the Current NEM Programs. Witness Beach defined resiliency as "the ability to respond to and recover from low-frequency, high-consequence, 'dark sky' events that may last longer in time and affect a larger

area." Tr. at 290.25 – 290.26. He then went on to explain that "new types of DERs, such as storage, offer new benefits such as enhanced reliability and resiliency that should be added to the value stack." Tr. at 290.14. Witness Barnes begins his testimony noting that there is no "single completely agreed-upon definition" of "resilience." Tr. at 327.29 - Tr. at 327.30. Witness Barnes goes on to offer a definition of resilience that differs from Witness Beach. *Id*. Witness Furtick testified that the Utility receives no benefit in terms of resiliency or reliability arising from customer-sited generation under the Current NEM Programs. Tr. at 25.5. In fact, he notes that where the Utility experiences extreme weather events, customer-generators would have experienced those same sort of extreme weather events (i.e., a hurricane). Tr. at 24.5 - 25.5. Mr. Furtick also raised the possibility that customer-generators may create safety concerns for Utility crews trying to repair damaged facilities. *Id*. Given the conflicting testimony on the definition of resiliency, as well as the potential for these customer-generation systems to actually increase the risk of harm to the grid and Utility crews, the Commission simply finds no compelling evidence in this docket that these customer-sited generations systems contribute to resiliency at all, and certainly not in a manner which could then be monetized and reflected in rates or methodologies underlying NEM programs in South Carolina. To the extent that a Party wishes to monetize resiliency or reliability benefits, such benefits must be quantified by specific data and evidence and proved to this Commission in a manner similar to a contested rate-making proceeding.

2. Methodology for Value of Customer-Generation.

Although Act 62 requires the Commission to establish a methodology for the value of energy produced by customer-generators, the Current NEM Programs already have a methodology by which to measure costs and benefits of these programs. These were established in Docket No.

2014-246-E. The Current Methodology is comprised of eleven (11) value components and specifies the calculations for each. Generally, the parties in this docket have expressed satisfaction over the Current Methodology as utilized in the Current NEM Programs. The limited changes that were proposed are premature at this time given that the benefits of things like storage and grid resiliency, if any, have not been realized in a manner sufficient to warrant a change to the Current Methodology—or, if they have, no party has presented evidence to that effect. Likewise, as discussed above, the Current NEM Programs met the call of Act 236 by cementing rooftop solar in South Carolina for years to come, and the Current Methodology is a part of that success. Finally, the Commission reminds the parties that the Current Methodology was developed and agreed to by a large contingent of stakeholders which resulted in a Commission-approved settlement. The Commission is hesitant to now change those components unilaterally given the apparent success of the Current NEM Programs. As such, no additional components are necessary and none of the components need to be eliminated from the methodology. Furthermore, the Commission will not include any externality costs within the Current Methodology because these costs, much like economic impacts, are extremely difficult to quantify.

VI. CONCLUSIONS OF LAW[3]

Having concluded its investigation of the current net energy metering program which is evidenced in a record of testimony of the witnesses and representations of counsel and after careful consideration of the issues and review of all evidence in the record, the Commission hereby makes the following determinations regarding the costs and benefits of the current net energy metering program:

[3] To the extent the following conclusions of law are findings of fact, they are so adopted.

1. In evaluating NEM programs in South Carolina, utilizing a combination of widely-recognized cost-benefit tests will provide the Commission with a comprehensive overview of these programs.

2. The Current NEM Programs are a product of Act 236 and were developed via a Commission-approved settlement, which included DESC, Duke, clean energy advocates, solar developers, and the ORS. The current customer-generator programs were designed to incent and accelerate the deployment of customer-sited solar. The current customer-generator programs have resulted in over 100 MW of customer-sited generation in the Duke service territories and over 110 MW in the DESC service territory. Likewise, the forecasts provided in this docket indicate that solar is so firmly established in South Carolina that it is expected to grow well into the future, even under conservative estimates that show the complete elimination of federal tax credits. As such, Act 236 and the Commission, through its implementation orders, helped establish a robust NEM program in South Carolina. Neither Act 236 nor the implementation orders address subsidization or cost-shift and there are no requirements to mitigate the impact on non-participating customers.

3. Studies performed to determine the aggregate impact of customer-generators on the electrical utility's long-run marginal costs of generation, distribution, and transmission reflect that customers under the Current NEM Programs are benefitted in excess of their contribution. The long-run marginal cost analysis provided a forward-looking analysis to determine if NEM customers will pay their fair share of future costs attributable to their use. A review of the record indicates that as NEM customers reduce their consumption from the Utility and receive retail credits for exports. As such, they reduce their contribution to costs—from total costs reflected in variable retail rates (which include the fixed costs of the assets developed and maintained for these

customers) to the Utility's avoided costs. However, the Commission takes note that the Utilities may be able to recover these costs given current cost recovery mechanisms, but customers may actually incur net costs as a result of those recovery mechanisms.

4. The Commission finds it compelling that results of the marginal studies performed by witnesses representing DESC, Duke, and the ORS consistently indicate future cost-shift. This arises from the fact that although NEM customers typically see lower electricity bills, Utilities must plan and build their system to serve NEM customers during peak times just as they would for non-NEM customers to provide reliable service to all customers. Flat or tiered volumetric rates are not designed to and are unable to capture the full cost to serve NEM customers, leaving the Utilities with no option but to recover costs from other customers. Jurisdictions are increasingly moving away from these volumetric rates in favor of innovative rate structures to address the cost-shift arising under NEM programs, and the goals within Act 62 require more sophisticated rate-making tools for the Solar Choice program than those existing under the Current NEM Programs to ensure NEM customers pay their fair share of costs.

5. Although Act 62 envisions the establishment of a successor NEM program, Act 62 does not change the terms upon which Current NEM Programs are offered. A review of the record indicates that the Current NEM Programs were successful in jump starting customer-sited generation in South Carolina and that, in turn, has most likely had some positive impact on the South Carolina economy. However, the Commission takes note that while some jurisdictions consider direct and indirect economic benefits from a qualitative perspective, no jurisdiction uses this data in rate setting. The cross-examination of Witness Hefner clearly illustrated the cautions advanced by DESC Witness Everett and Duke Witness Wright related to the consideration of direct

and indirect economic impacts. The Commission is hesitant to do so in this context given the apparent and proven difficulty in actually estimating these impacts.

6. The Current Methodology measures costs and benefits of these programs, and it was established in Docket No. 2014-246-E. The methodology is comprised of eleven (11) value components and specifies the calculations for each. The eleven components of this methodology are used to establish the value of distributed energy resource generation. Although the Current NEM Programs have resulted in costs being shifted to non-participating customers, Act 236 does not have provisions limiting subsidization and cost-shift as does the successor legislation, Act 62. Moreover, as prescribed by Act 62, these programs will expire and be replaced by a successor program in the near future that will limit subsidization and cost-shift. S.C. Code Ann. § 58-40-20(B). The General Assembly intends for the Commission to utilize the analyses in this docket to achieve the goals related to Solar Choice within Act 62.

VII. ORDERING PROVISIONS

IT IS THEREFORE ORDERED THAT:

1. It is necessary to utilize a range of tests and analyses, including the Total Resource Cost Test, Societal Test, Utility Cost Test, and Ratepayer Impact Measure Test, as the framework under which to evaluate the costs and benefits of NEM programs in South Carolina.

2. For any test used to evaluate NEM programs in South Carolina, fully-vetted and approved input assumptions shall be utilized when and as available.

3. NEM programs have the unique potential to harm non-participants in a way other programs do not, which is further compounded by the Utilities' ability to remain "neutral" from a cost perspective given current recovery mechanisms.

4. A material cost-shift arises under Current NEM Programs as a result of simplistic, flat or tiered volumetric rates that do not capture the Utilities' cost to serve NEM customers.

5. The Current Methodology and the values utilized therein remain unchanged.

6. Economic impacts of the Current NEM Programs have not been sufficiently proven in this docket to a degree which would justify influencing the Commission's analysis, and any evaluation of NEM programs—including any associated economic impacts—should not only include quantifiable, evidence-based costs and benefits, but also examine future opportunity costs of current decisions (such as the ability to encourage other emerging technologies).

7. Rooftop solar has an established presence in South Carolina and will continue to grow over the next ten years, even in the most conservative scenarios showing the elimination of federal tax benefits.

8. The Commission will evaluate future Solar Choice Programs in terms of any cost-shift implications on lower-income customers.

9. The Commission will evaluate a broad range of sophisticated rate tools identified as best-practices—including, but not limited to, mechanisms to ensure that customer-generators pay for the costs associated with being connected to the grid and having real time access to the grid—when considering tariffs in the Utilities' Solar Choice Dockets to achieve the goals of Act 62.

10. The Commission has concluded its investigation of the Current NEM Programs and will utilize the determinations made herein when evaluating each Utility's Solar Choice Tariff in subsequent dockets.

11. This Order shall remain in full force and effect until further Order of the Commission.

BY ORDER OF THE COMMISSION:

Justin T. Williams, Chairman
Public Service Commission of South Carolina